OIPE
JAN 04 2006
PATENT & TRADEMARK OFFICE
IAP25

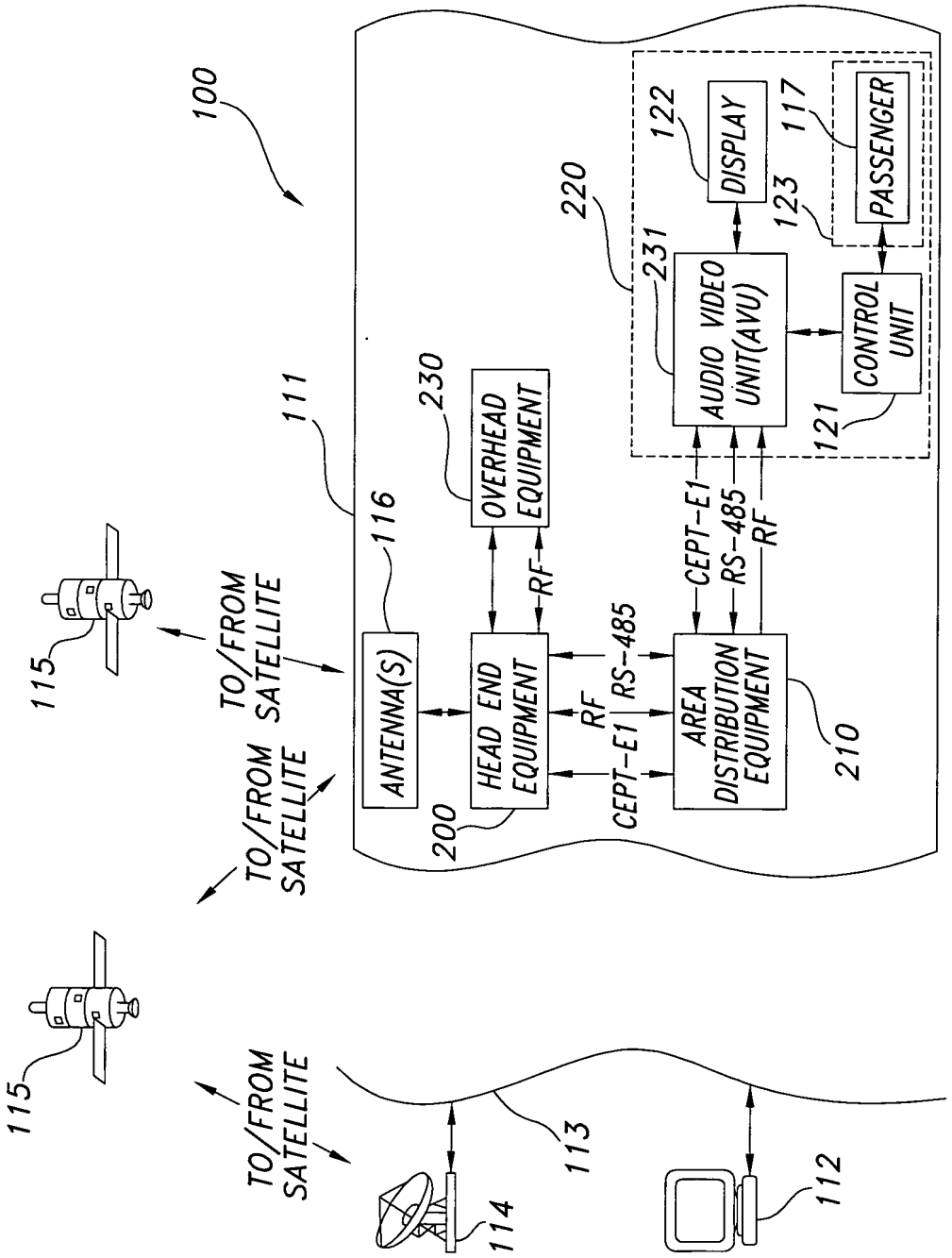

FIG. 1

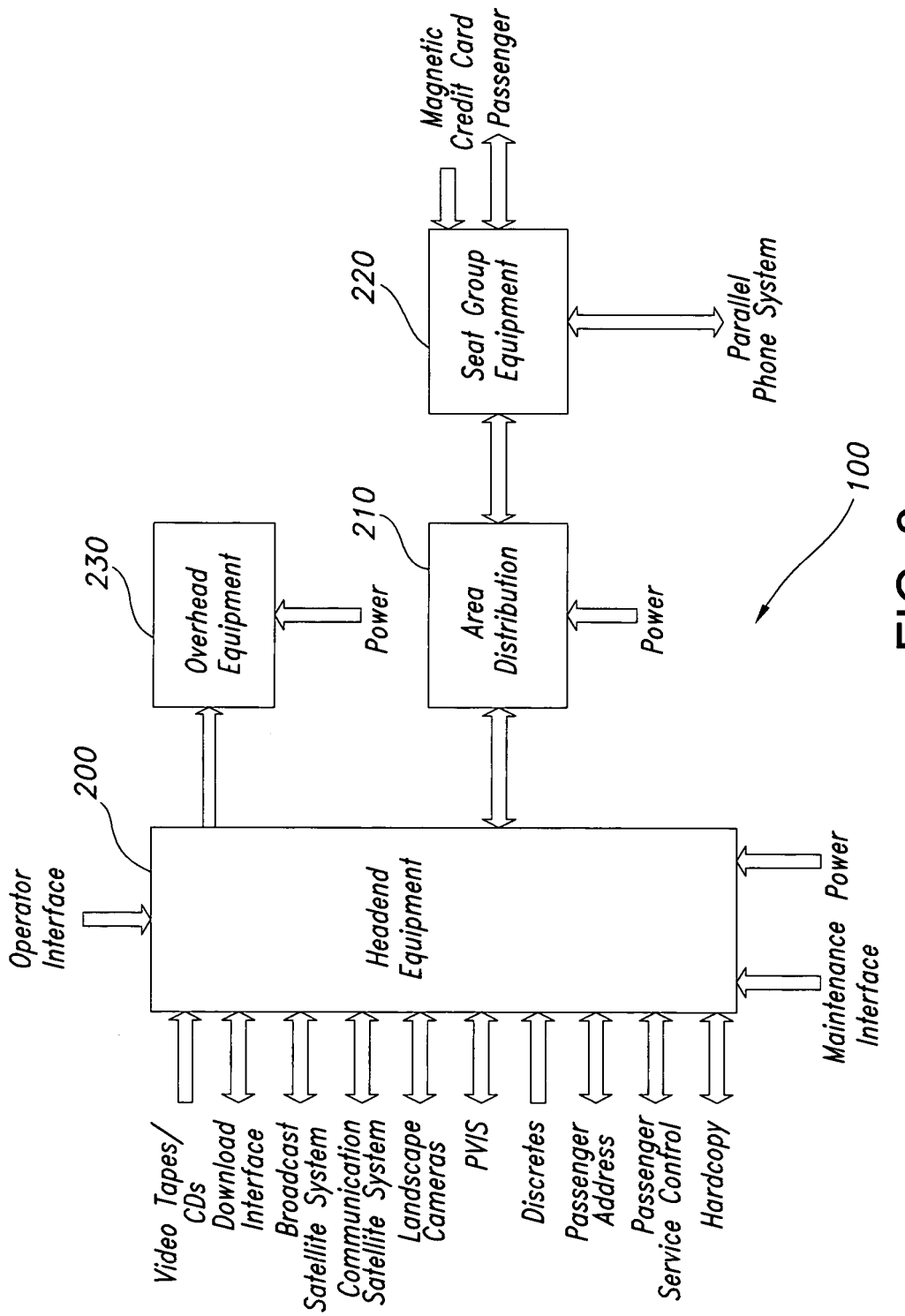
Magnetic Credit Card Passenger
220
Seat Group Equipment
Parallel Phone System
100
230
Overhead Equipment
Power
210
Area Distribution
Power
200
Operator Interface
Headend Equipment
Maintenance Interface
Power
Video Tapes/ CDs
Download Interface
Broadcast Satellite System
Communication Satellite System
Landscape Cameras
PVIS
Discretes
Passenger Address
Passenger Service Control
Hardcopy

FIG. 2

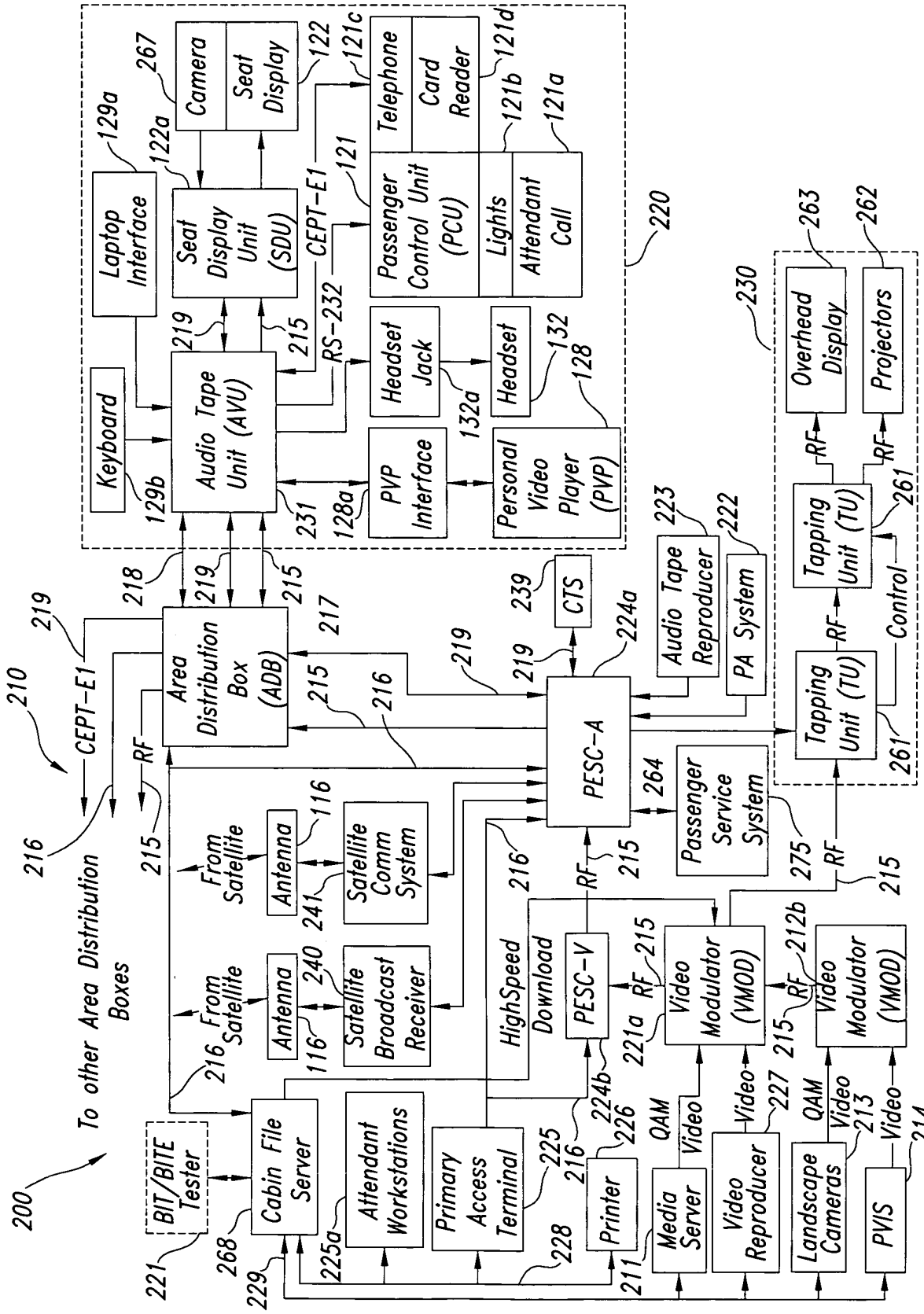
200
To other Area Distribution Boxes
210
CEPT-E1
RF
216
215
219
218
Area Distribution Box (ADB)
217
Keyboard
129b
Audio Tape Unit (AVU)
Laptop Interface
129a
Seat Display Unit (SDU)
122a
Camera
267
Seat Display
122
121c
Passenger Control Unit (PCU)
121
Telephone
Card Reader
121d
121b
Lights
Attendant Call
121a
220
RS-232
CEPT-E1
231
215
219
128a
PVP Interface
Headset Jack
132a
Personal Video Player (PVP)
Headset
132
128
230
Overhead Display
263
Projectors
262
Tapping Unit (TU)
RF
261
Control
239
CTS
224a
PESC-A
264
Audio Tape Reproducer
223
PA System
222
Passenger Service System
275
From Satellite
Antenna
116
241
Satellite Comm System
240
Satellite Broadcast Receiver
HighSpeed Download
PESC-V
221a
224b
Video Modulator (VMOD)
212b
QAM
Video
227
213
214
BIT/BITE Tester
221
Cabin File Server
268
229
Attendant Workstations
225a
Primary Access Terminal
225
228
Printer
226
211
Media Server
Video Reproducer
Landscape Cameras
PVIS

FIG. 3

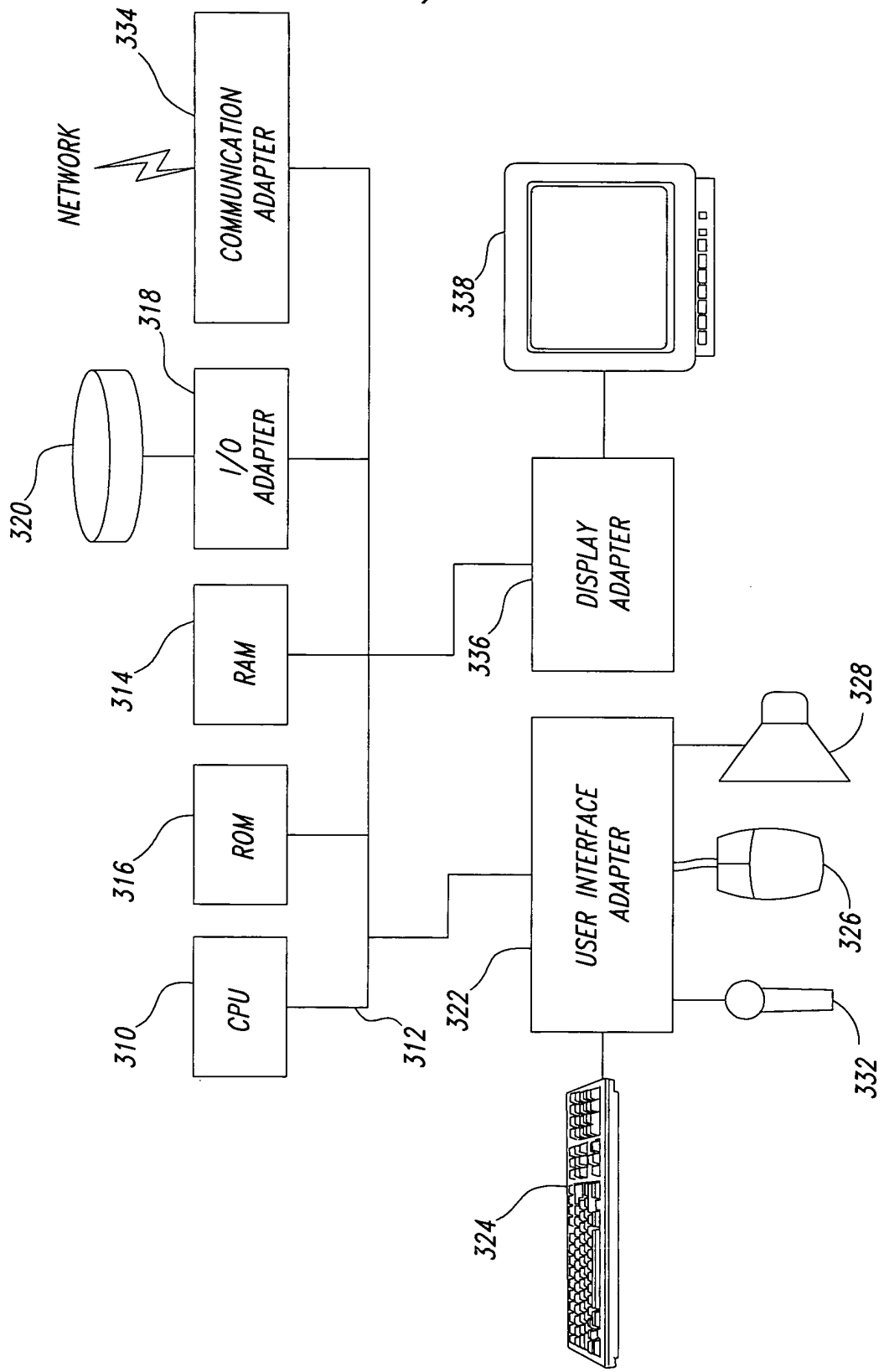
NETWORK
334
COMMUNICATION ADAPTER
318
I/O ADAPTER
320
338
DISPLAY ADAPTER
336
314
RAM
316
ROM
310
CPU
312
USER INTERFACE ADAPTER
322
328
326
332
324

FIG. 4

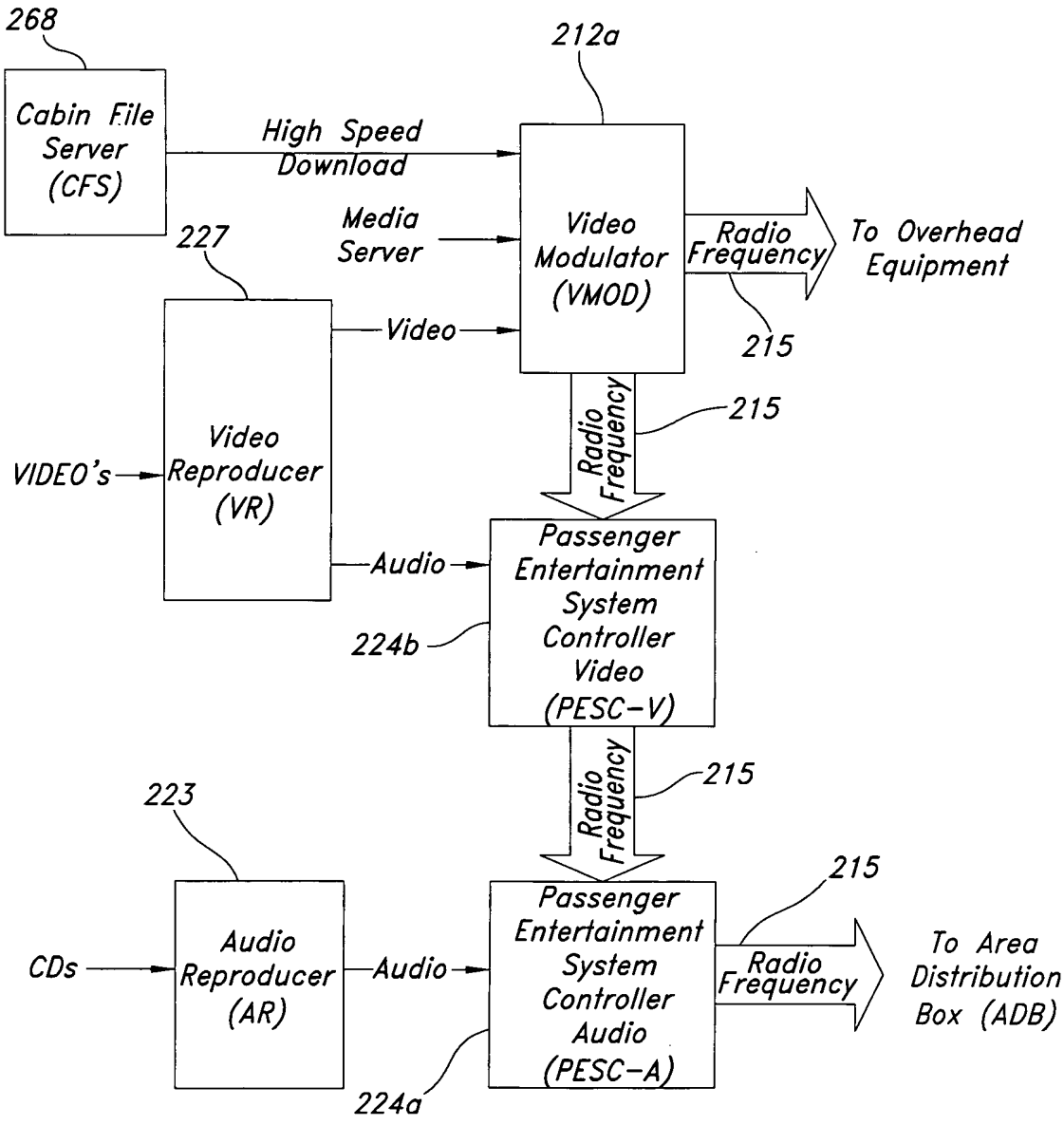
268
Cabin File Server (CFS)
212a
High Speed Download
Media Server
Video Modulator (VMOD)
Radio Frequency
To Overhead Equipment
215
227
Video
Video Reproducer (VR)
VIDEO's
Radio Frequency
215
Audio
224b
Passenger Entertainment System Controller Video (PESC-V)
Radio Frequency
215
223
Audio Reproducer (AR)
CDs
Audio
Passenger Entertainment System Controller Audio (PESC-A)
224a
215
Radio Frequency
To Area Distribution Box (ADB)

FIG. 5

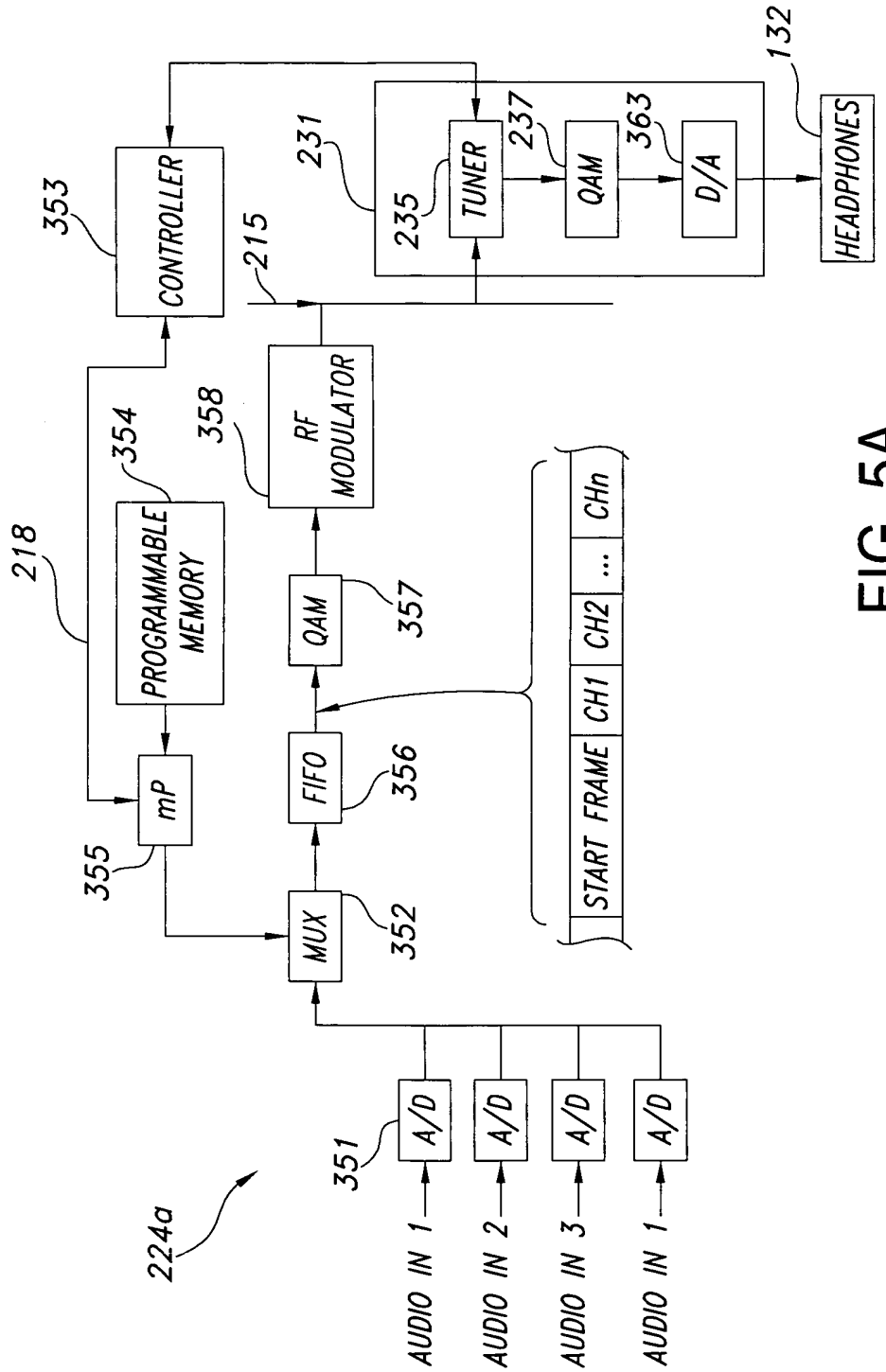
224a
AUDIO IN 1
AUDIO IN 2
AUDIO IN 3
AUDIO IN 1
A/D
A/D
A/D
A/D
351
MUX
352
mP
355
FIFO
356
QAM
357
RF MODULATOR
358
PROGRAMMABLE MEMORY
354
218
CONTROLLER
353
215
231
TUNER
235
237
QAM
363
D/A
132
HEADPHONES
START FRAME
CH1
CH2
...
CHn

FIG. 5A

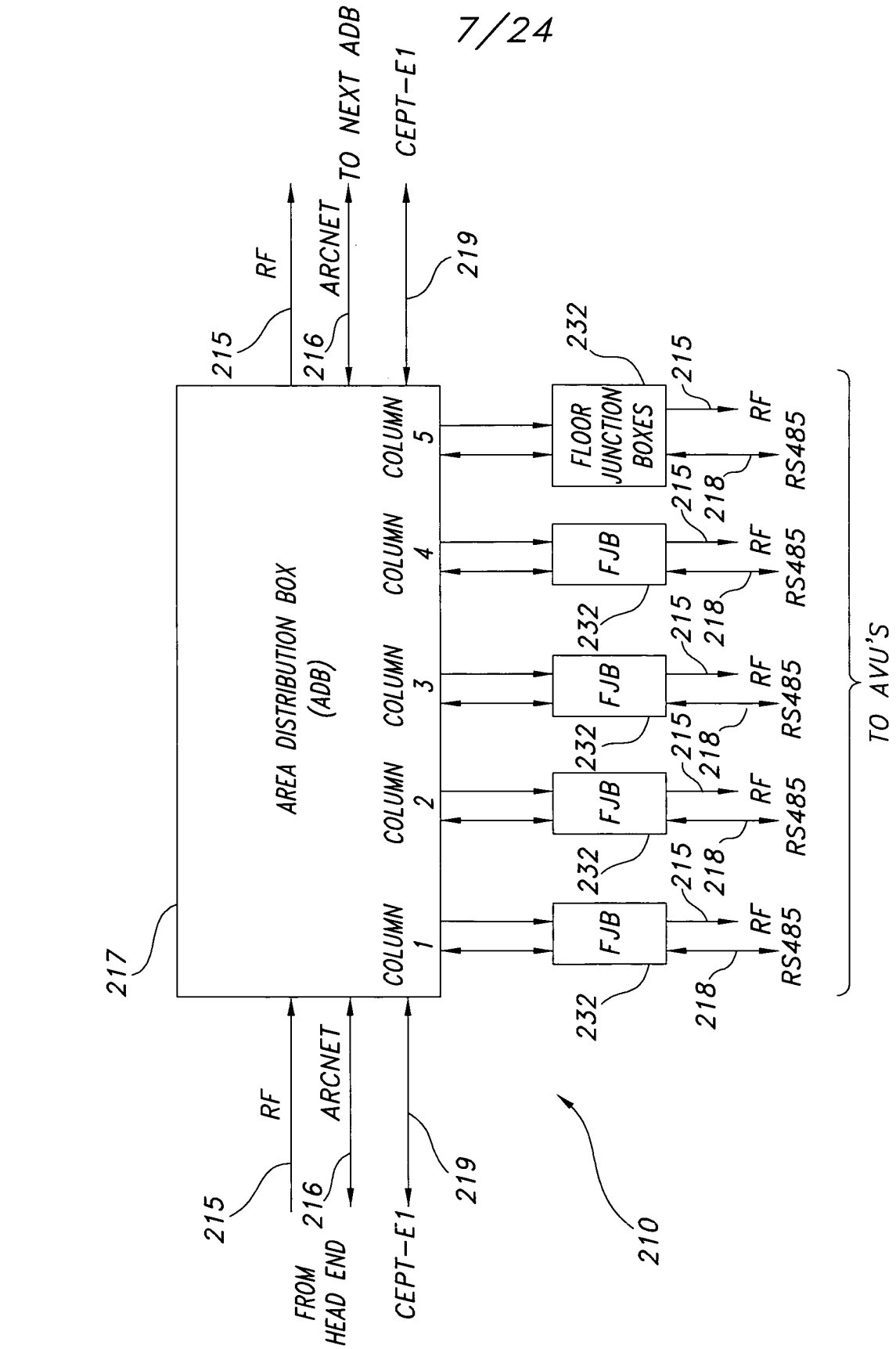
AREA DISTRIBUTION BOX
(ADB)
217
COLUMN 1
COLUMN 2
COLUMN 3
COLUMN 4
COLUMN 5
RF
ARCNET
CEPT-E1
215
216
219
FROM HEAD END
TO NEXT ADB
FJB
232
FLOOR JUNCTION BOXES
218
RS485
TO AVU'S
210

FIG. 6

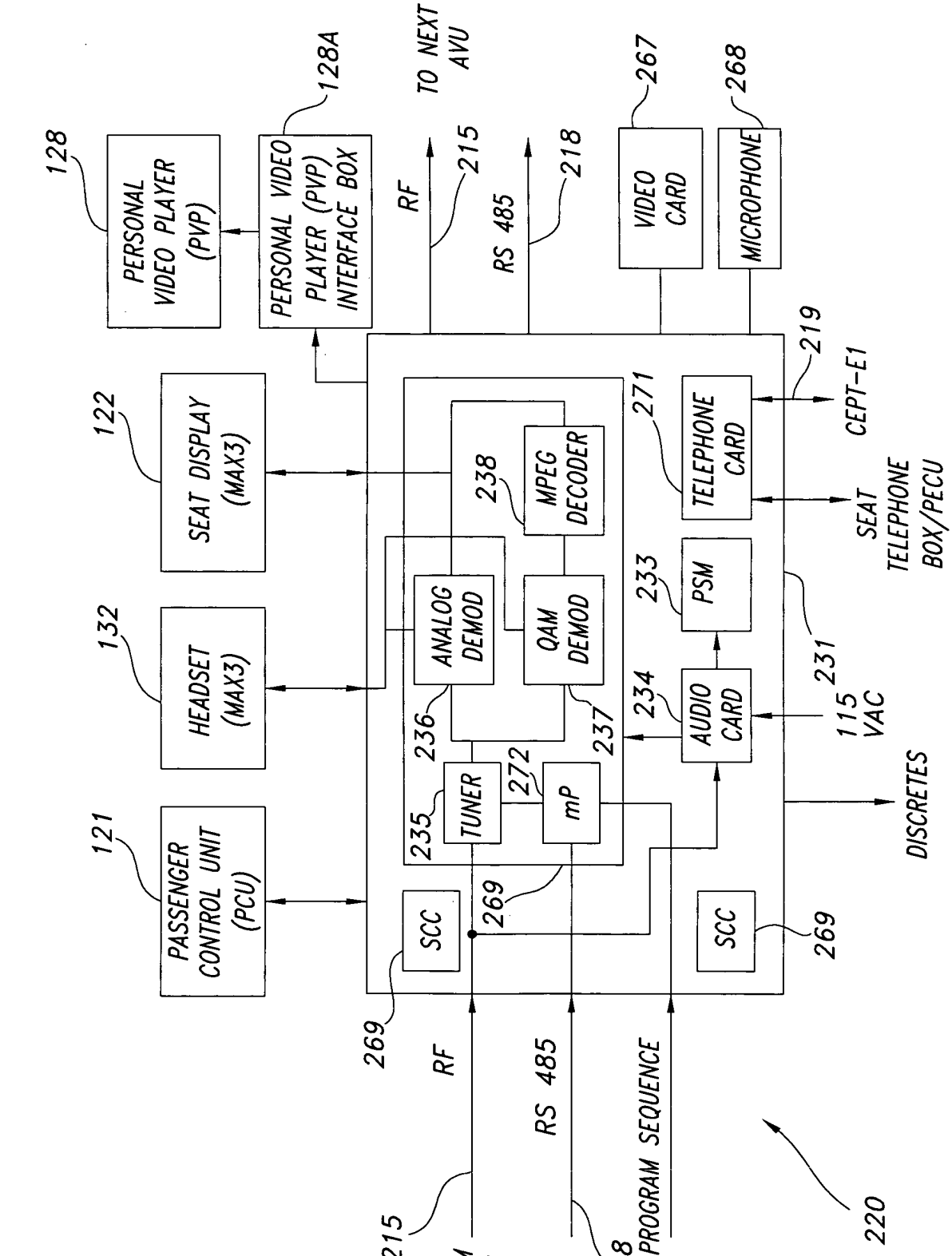
128
PERSONAL VIDEO PLAYER (PVP)
128A
PERSONAL VIDEO PLAYER (PVP) INTERFACE BOX
TO NEXT AVU
RF
215
RS 485
218
267
VIDEO CARD
268
MICROPHONE
219
CEPT-E1
122
SEAT DISPLAY (MAX3)
238
MPEG DECODER
271
TELEPHONE CARD
SEAT TELEPHONE BOX/PECU
132
HEADSET (MAX3)
ANALOG DEMOD
QAM DEMOD
233
PSM
231
115 VAC
234
AUDIO CARD
236
237
121
PASSENGER CONTROL UNIT (PCU)
235
TUNER
272
mP
DISCRETES
SCC
269
SCC
269
269
RF
RS 485
PROGRAM SEQUENCE
215
FROM ADB
218
220

FIG. 7

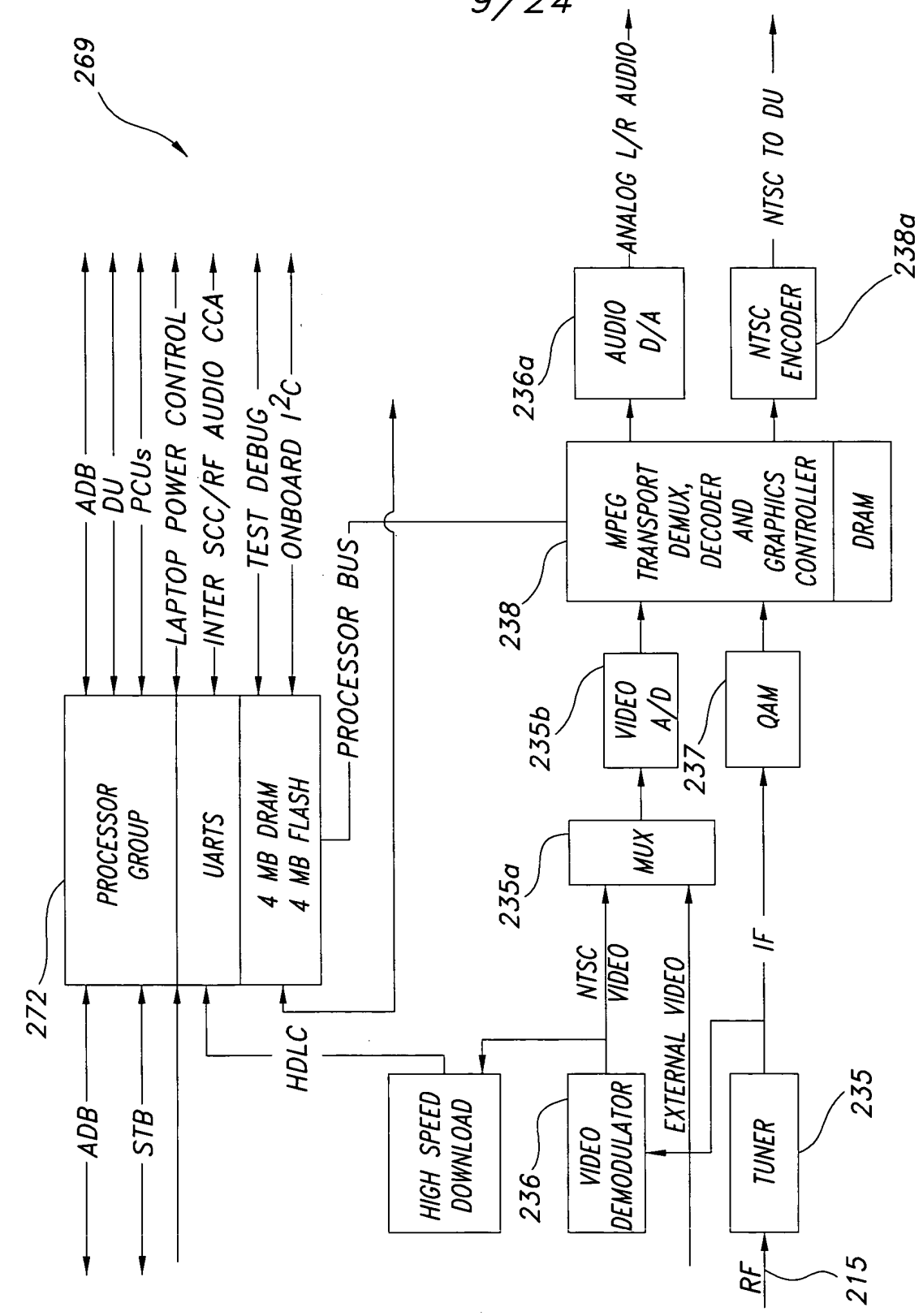
269
ADB
DU
PCUs
LAPTOP POWER CONTROL
INTER SCC/RF AUDIO CCA
TEST DEBUG
ONBOARD I2C
PROCESSOR BUS
ANALOG L/R AUDIO
NTSC TO DU
PROCESSOR GROUP
UARTS
4 MB DRAM
4 MB FLASH
AUDIO D/A
NTSC ENCODER
MPEG TRANSPORT DEMUX, DECODER AND GRAPHICS CONTROLLER
DRAM
VIDEO A/D
QAM
MUX
HIGH SPEED DOWNLOAD
VIDEO DEMODULATOR
TUNER
NTSC VIDEO
EXTERNAL VIDEO
IF
HDLC
ADB
STB
RF
272
236a
238a
238
235b
237
235a
236
235
215

FIG. 7a

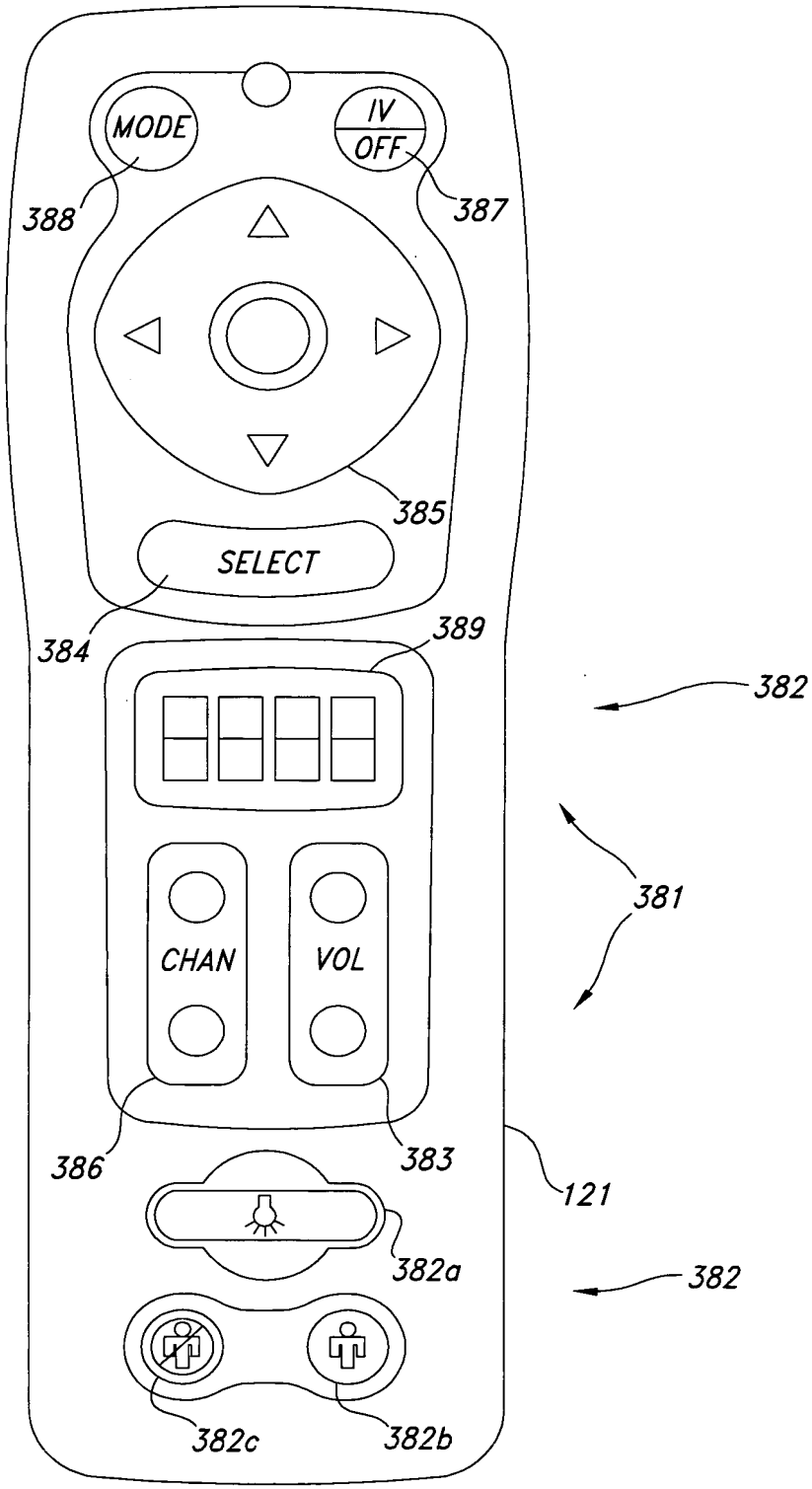
MODE
IV
OFF
388
387
385
SELECT
384
389
382
381
CHAN
VOL
386
383
121
382a
382
382c
382b

FIG. 7b

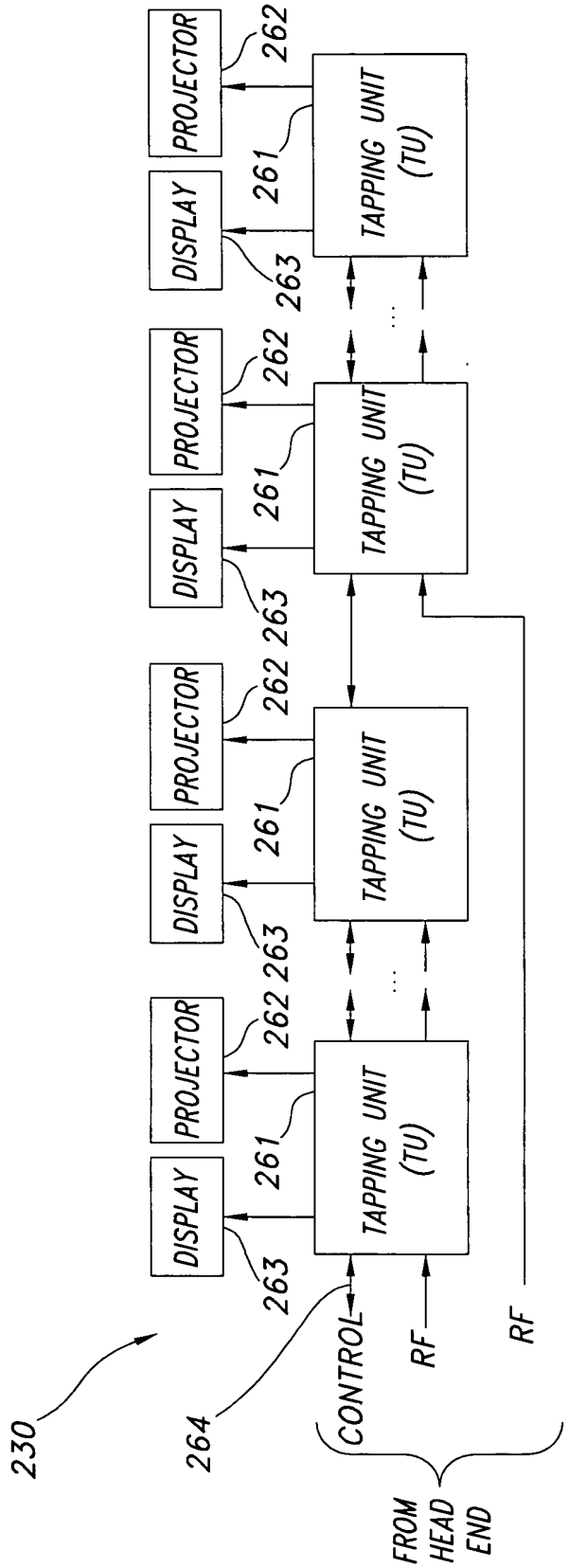
230
264
CONTROL
RF
RF
FROM HEAD END
DISPLAY
PROJECTOR
TAPPING UNIT (TU)
261
262
263

FIG. 8

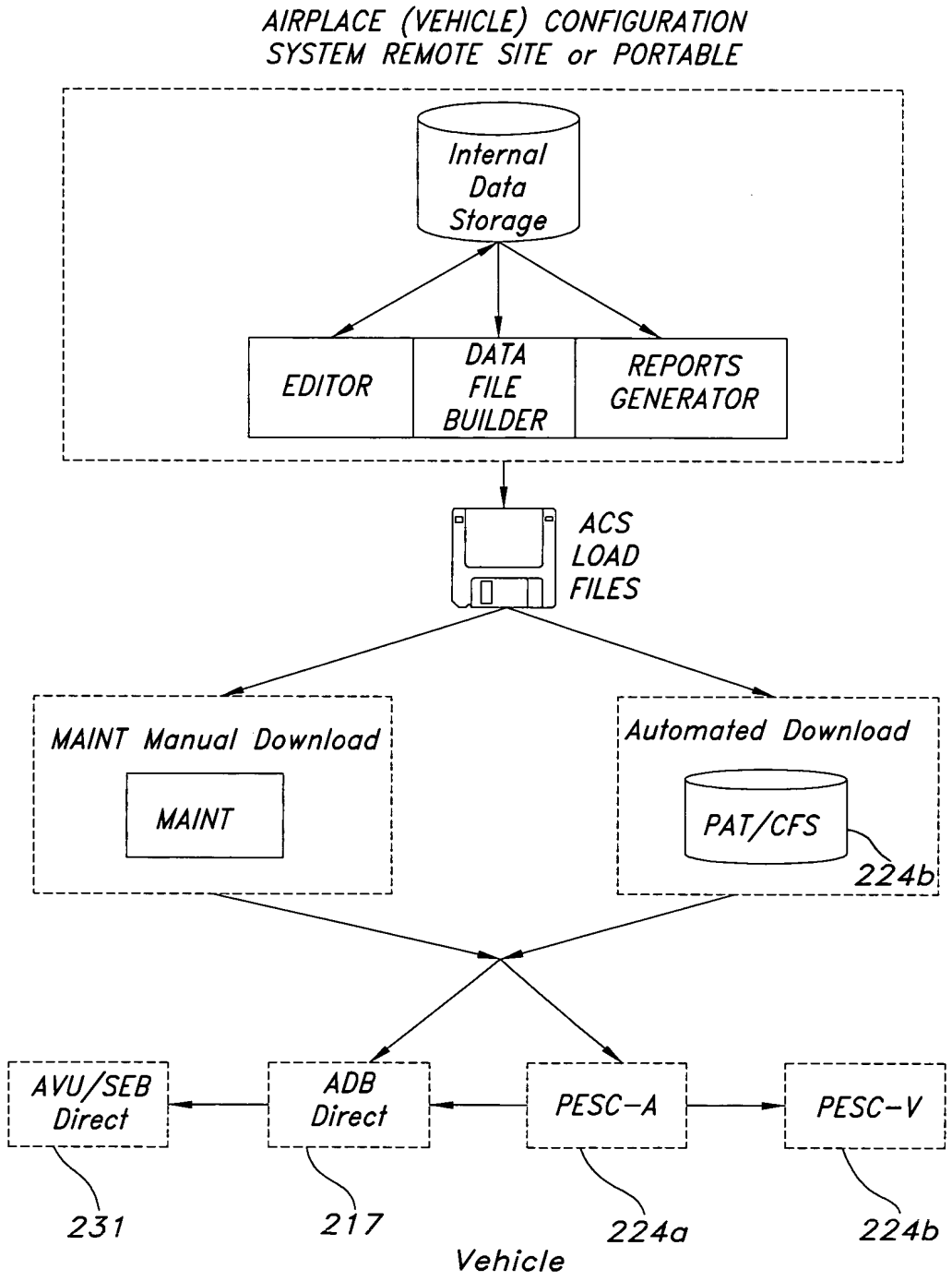
AIRPLACE (VEHICLE) CONFIGURATION
SYSTEM REMOTE SITE or PORTABLE
Internal Data Storage
EDITOR
DATA FILE BUILDER
REPORTS GENERATOR
ACS LOAD FILES
MAINT Manual Download
MAINT
Automated Download
PAT/CFS
224b
AVU/SEB Direct
ADB Direct
PESC-A
PESC-V
231
217
224a
224b
Vehicle

FIG. 9

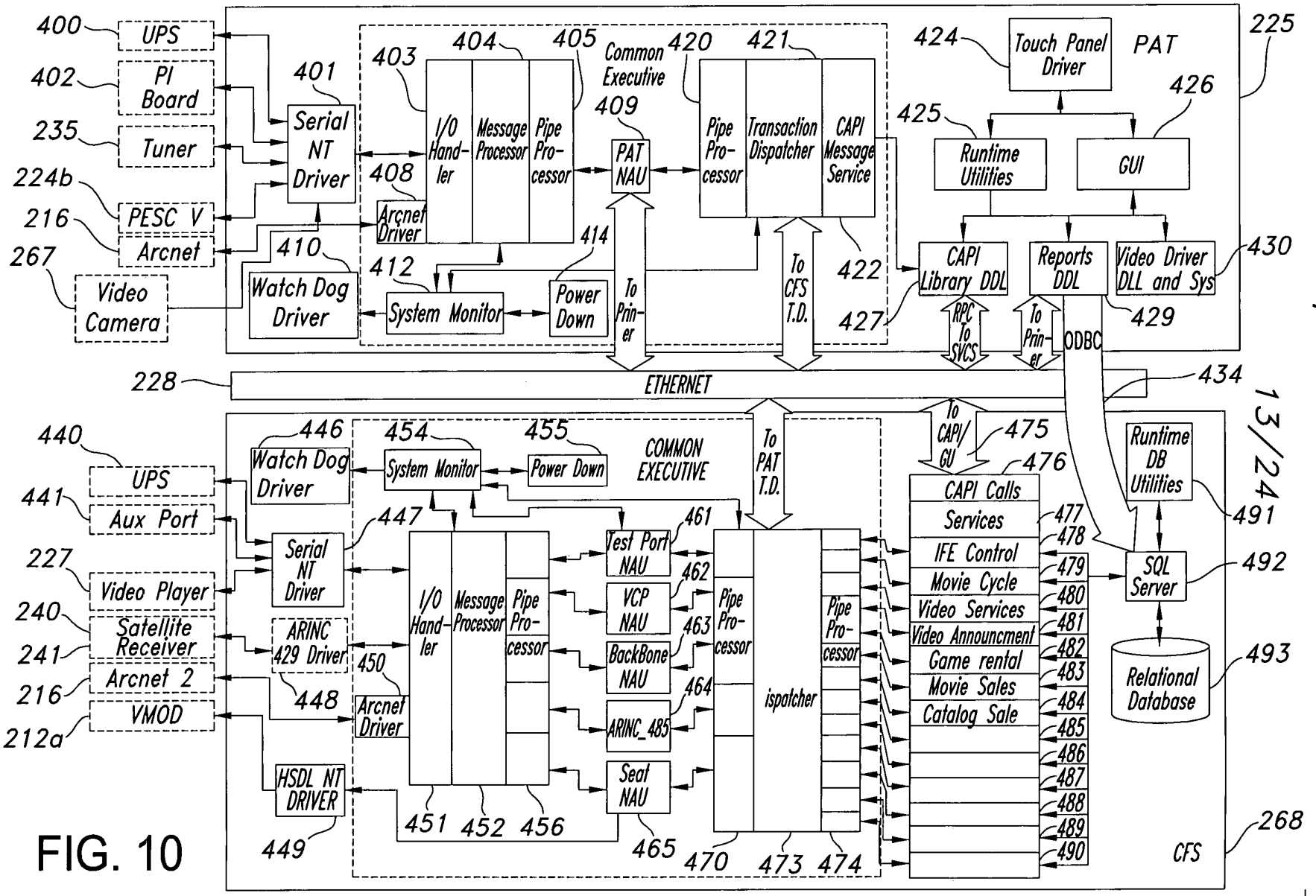

FIG. 10

Replacement Sheet

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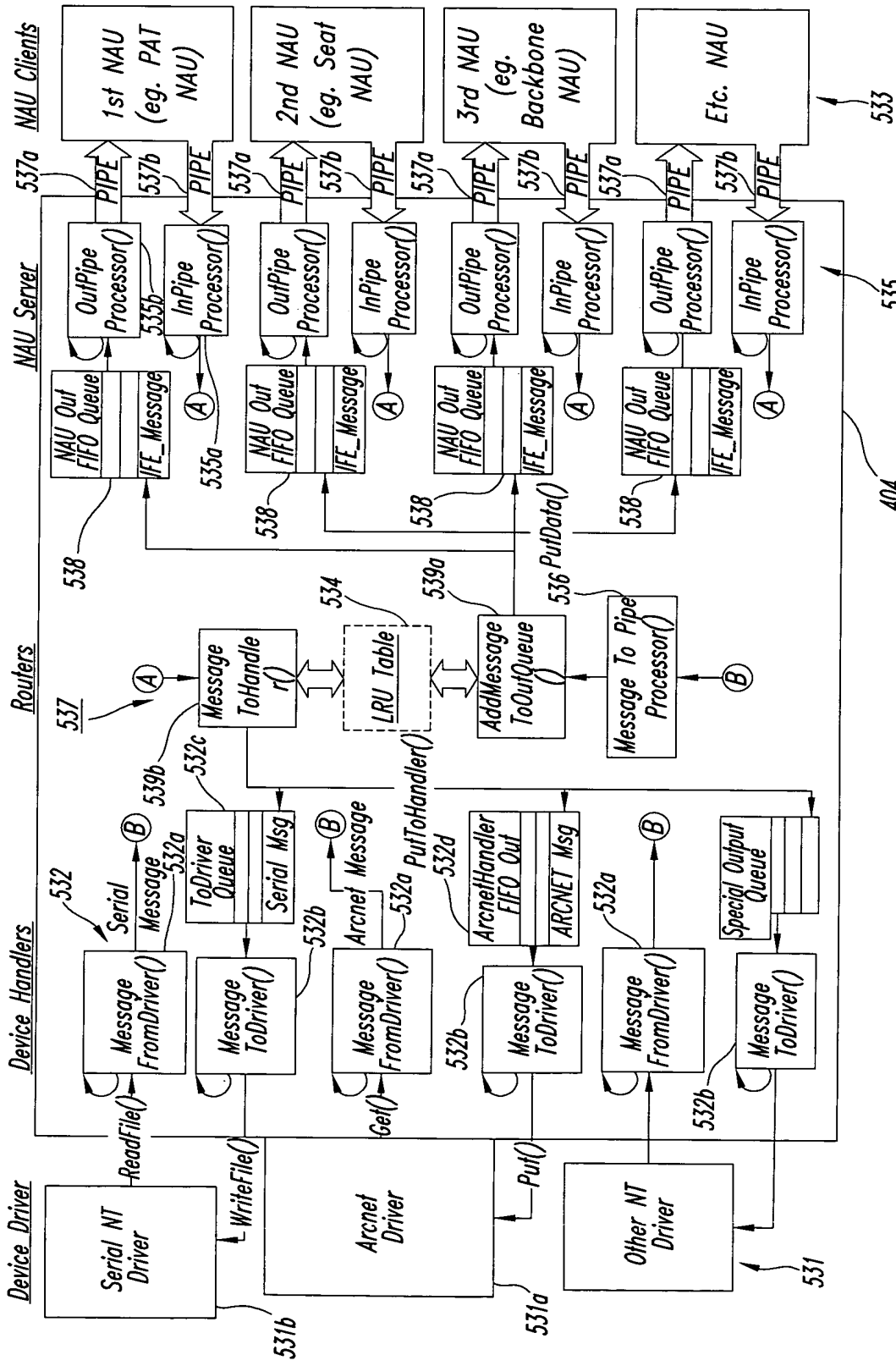

NAU Clients
1st NAU (eg. PAT NAU)
2nd NAU (eg. Seat NAU)
3rd NAU (eg. Backbone NAU)
Etc. NAU
533
NAU Server
537a
537b
PIPE
OutPipe Processor()
InPipe Processor()
535b
535a
535
NAU Out FIFO Queue
IFE_Message
538
404
Routers
537
Message ToHandler()
LRU Table
534
AddMessage ToOutQueue()
539a
539b
536
PutData()
Message To Pipe Processor()
PutToHandler()
Device Handlers
532
532a
532b
532c
532d
Serial Message
ToDriver Queue
Serial Msg
Arcnet Message
ArcnetHandler FIFO Out
ARCNET Msg
Special Output Queue
Message FromDriver()
Message ToDriver()
Get()
Put()
Device Driver
Serial NT Driver
ReadFile()
WriteFile()
Arcnet Driver
Other NT Driver
531
531a
531b

FIG. 11

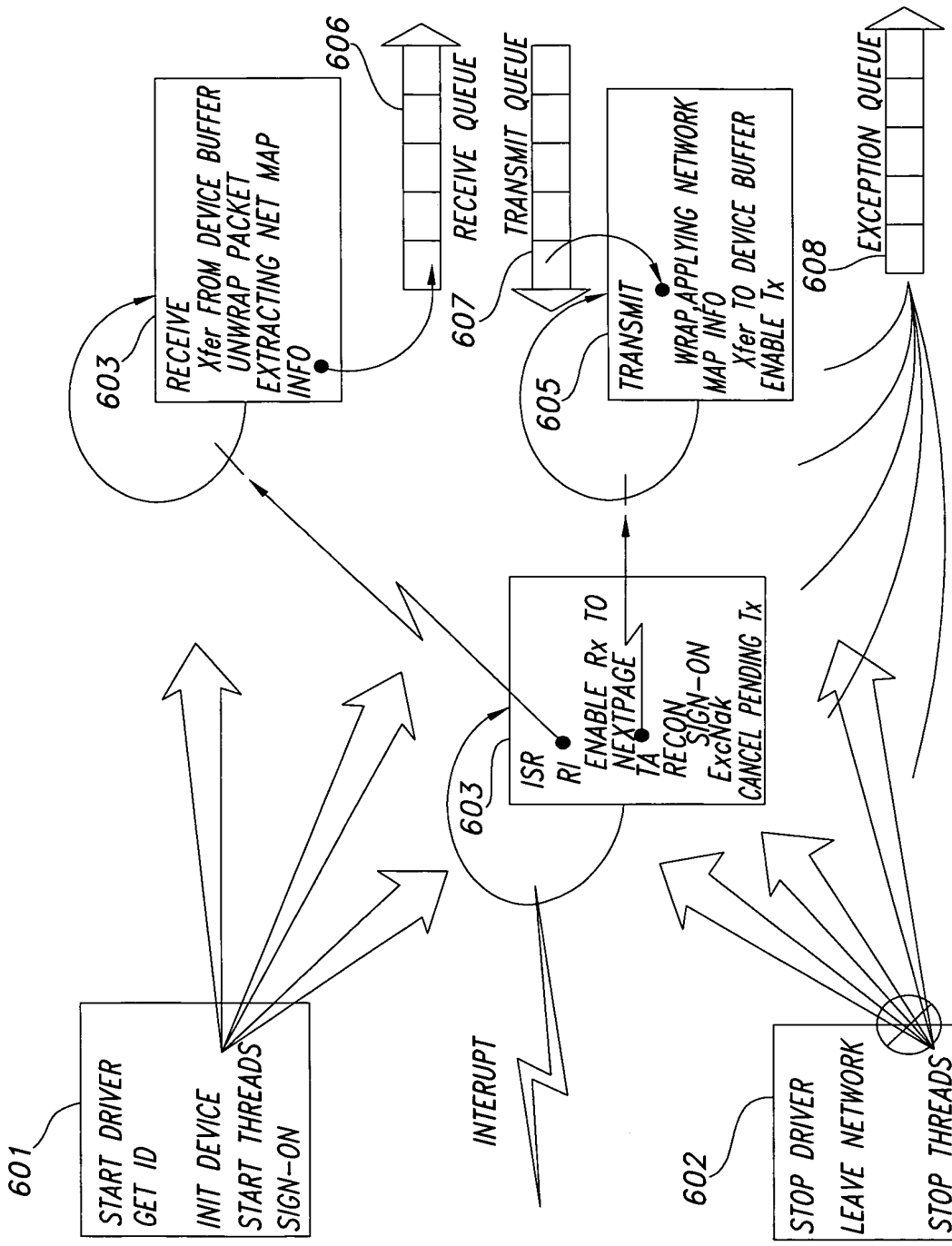

601
START DRIVER
GET ID
INIT DEVICE
START THREADS
SIGN-ON
602
STOP DRIVER
LEAVE NETWORK
STOP THREADS
INTERUPT
603
ISR
RI
ENABLE Rx TO
NEXTPAGE
TA
RECON
SIGN-ON
ExcNak
CANCEL PENDING Tx
603
RECEIVE
Xfer FROM DEVICE BUFFER
UNWRAP PACKET
EXTRACTING NET MAP
INFO
606
RECEIVE QUEUE
605
TRANSMIT
WRAP APPLYING NETWORK
MAP INFO
Xfer TO DEVICE BUFFER
ENABLE Tx
607
TRANSMIT QUEUE
608
EXCEPTION QUEUE

FIG. 12

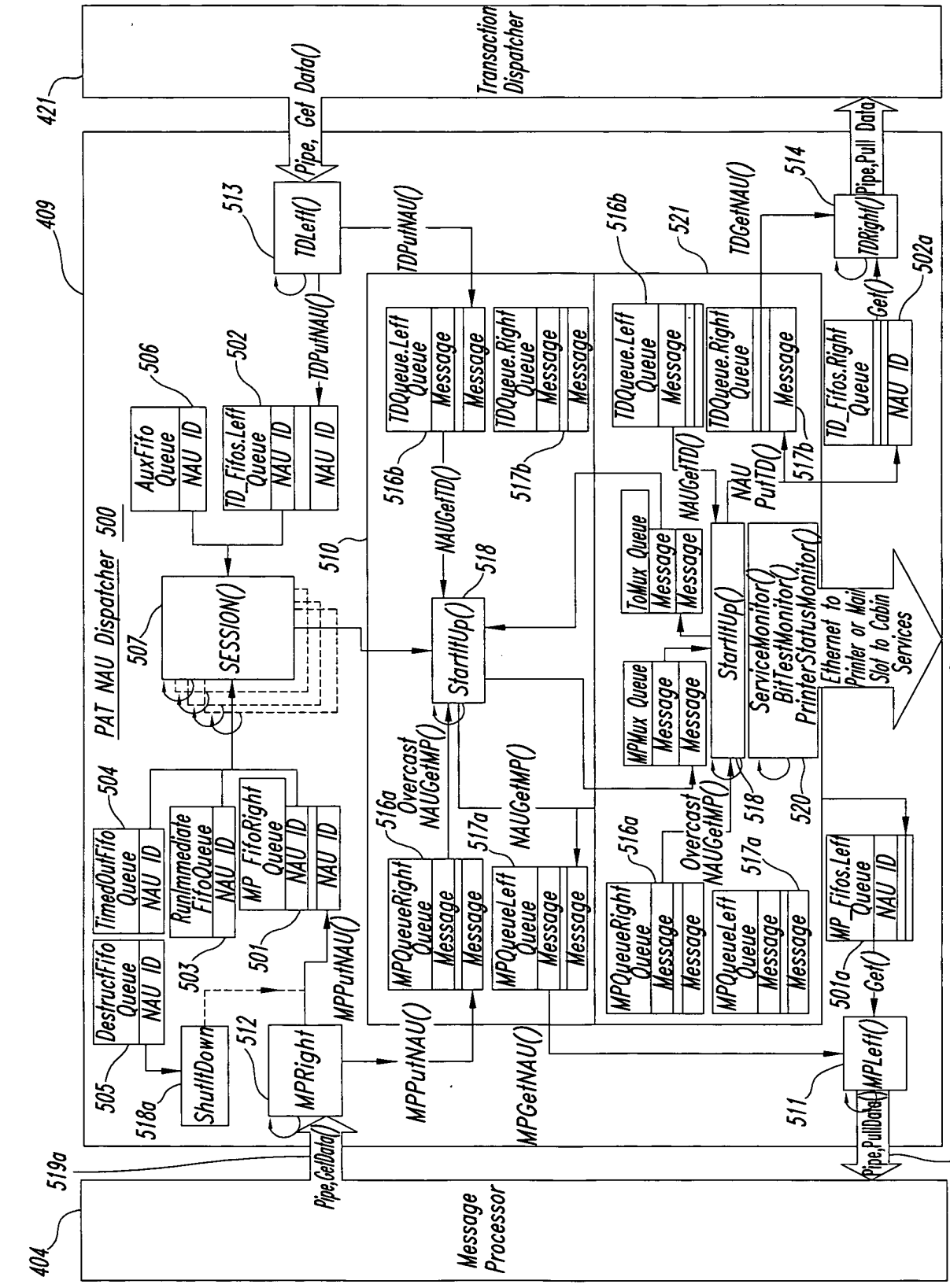

Transaction Dispatcher
421
Pipe, Get Data()
409
PAT NAU Dispatcher 500
TDLeft()
513
TDPutNAU()
TDGetNAU()
514
TDRight()
Pipe,Pull Data
Get()
502a
AuxFifo Queue NAU ID
506
TD_Fifos.Left Queue NAU ID NAU ID
502
TDPutNAU()
TDQueue.Left Queue Message Message
516b
TDQueue.Right Queue Message Message
517b
NAUGetTD()
510
SESSION()
507
StartItUp()
518
TDQueue.Left Queue Message
516b
TDQueue.Right Queue Message
521
TD_Fifos.Right Queue NAU ID
NAU PutTD()
517b
TimedOutFifo Queue NAU ID
504
RunImmediate FifoQueue NAU ID
MP FifoRight Queue NAU ID NAU ID
503
501
MPPutNAU()
DestructFifo Queue NAU ID
505
ShutItDown
518a
512
MPRight
Pipe,GetData()
519a
MPQueueRight Queue Message Message
516a
Overcast NAUGetMP()
MPQueueLeft Queue Message Message
517a
NAUGetMP()
MPPutNAU()
MPGetNAU()
ToMux Queue Message Message
NAUGetTD()
MPMux Queue Message Message
StartItUp()
ServiceMonitor()
BitTestMonitor()
PrinterStatusMonitor()
518
520
Ethernet to Printer or Mail Slot to Cabin Services
MPQueueRight Queue Message Message
516a
Overcast NAUGetMP()
MPQueueLeft Queue Message Message
517a
MP_Fifos.Left Queue NAU ID
501a
Get()
511
MPLeft()
Pipe,PullData()
519b
Message Processor
404

FIG. 13

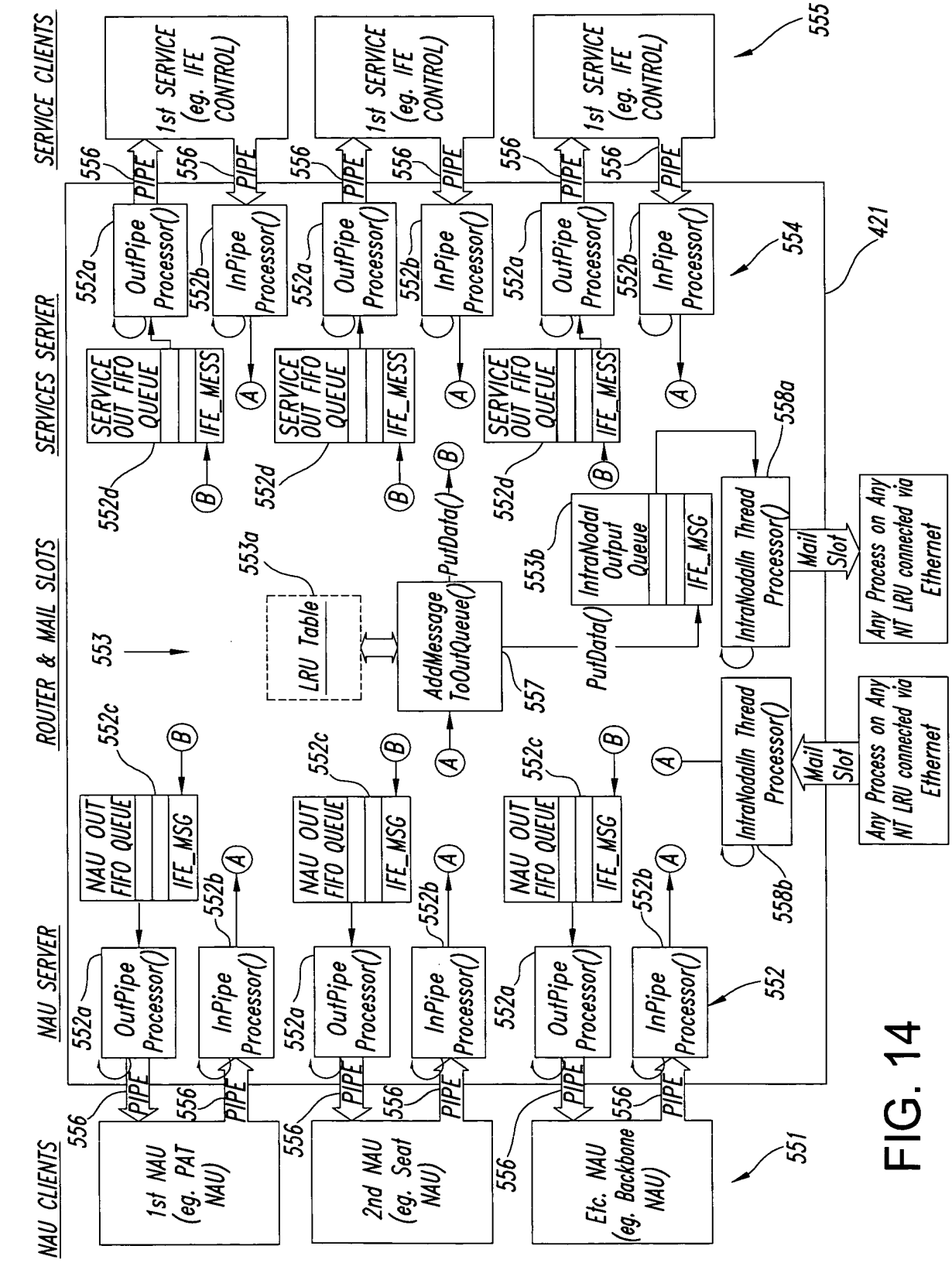
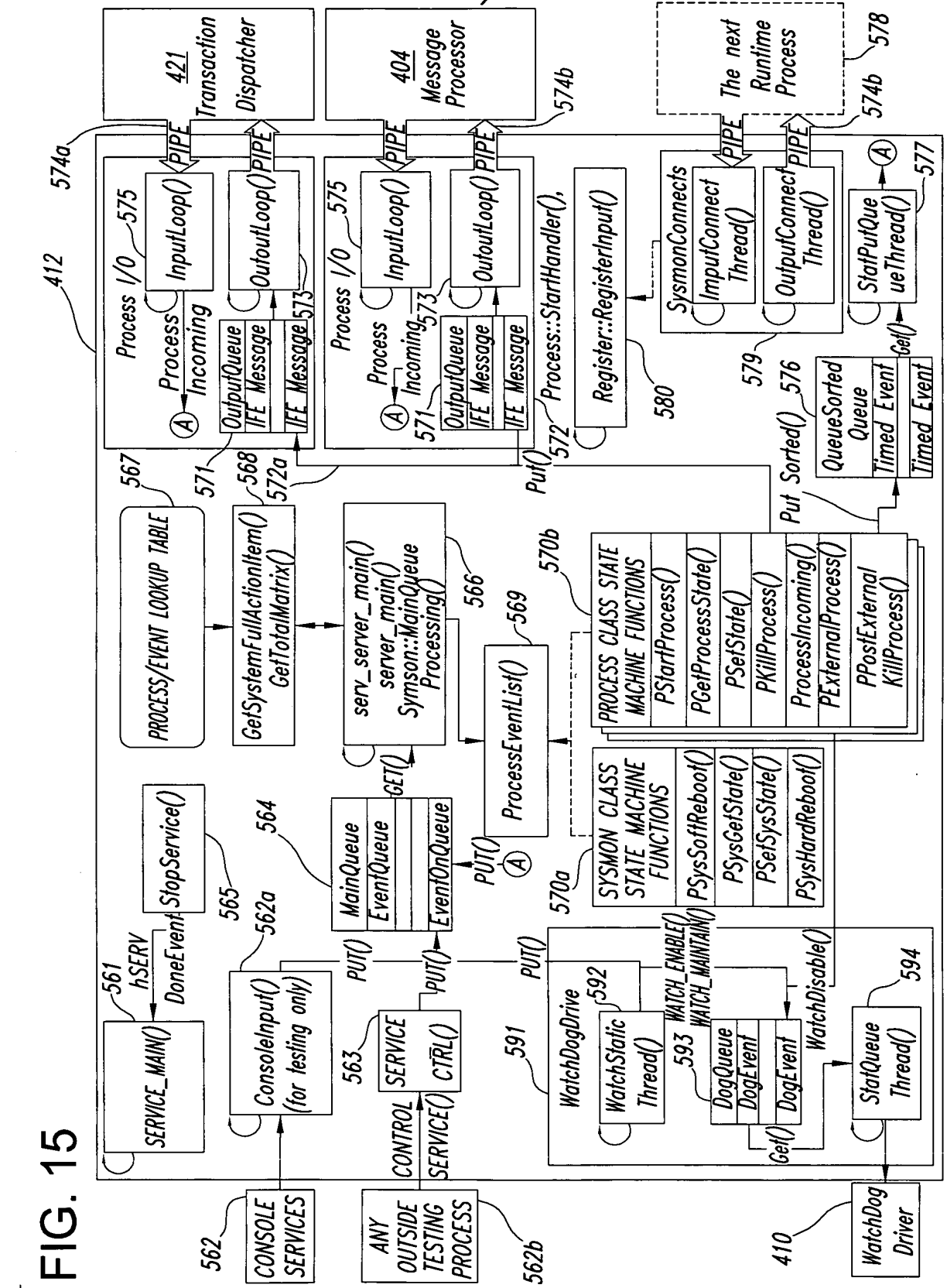

NAU CLIENTS
NAU SERVER
ROUTER & MAIL SLOTS
SERVICES SERVER
SERVICE CLIENTS
1st NAU (eg. PAT NAU)
2nd NAU (eg. Seat NAU)
Etc. NAU (eg. Backbone NAU)
551
552
553
554
555
556
PIPE
NAU OUT FIFO QUEUE
IFE_MSG
OutPipe Processor()
InPipe Processor()
552a
552b
552c
LRU Table
553a
AddMessage ToOutQueue()
PutData()
557
IntraNodal Output Queue
553b
IntraNodalIn Thread Processor()
558a
558b
Mail Slot
Any Process on Any NT LRU connected via Ethernet
SERVICE OUT FIFO QUEUE
552d
1st SERVICE (eg. IFE CONTROL)
421

FIG. 14

FIG. 15


421 Transaction Dispatcher
404 Message Processor
The next Runtime Process
578
574a
574b
412
PIPE
Process I/O
575
InputLoop()
OutoutLoop()
Process Incoming
OutputQueue
IFE Message
573
571
572
Process::StartHandler(),
Register::RegisterInput()
580
SysmonConnects
ImputConnect Thread()
OutputConnect Thread()
579
StatPutQue ueThread()
577
Get()
QueueSorted Queue
Timed Event
576
Put Sorted()
567
PROCESS/EVENT LOOKUP TABLE
568
572a
GetSystemFullActionItem()
GetTotalMatrix()
serv_server_main()
server_main()
Symson::MainQueue Processing()
566
570b
PROCESS CLASS STATE MACHINE FUNCTIONS
PStartProcess()
PGetProcessState()
PSetState()
PKillProcess()
ProcessIncoming()
PExternalProcess()
PPostExternal KillProcess()
ProcessEventList()
569
SYSMON CLASS STATE MACHINE FUNCTIONS
PSysSoftReboot()
PSysGetState()
PSetSysState()
PSysHardReboot()
570a
GET()
PUT()
MainQueue
EventQueue
EventOnQueue
564
StopService()
565
562a
561
hSERV
DoneEvent
SERVICE_MAIN()
ConsoleInput()
(for testing only)
SERVICE
CTRL()
563
CONTROL
SERVICE()
WatchDogDrive
591
WatchStatic Thread()
592
WATCH_ENABLE()
WATCH_MAINTAIN()
WatchDisable()
DogQueue
DogEvent
593
Get()
StatQueue Thread()
594
562
CONSOLE SERVICES
ANY OUTSIDE TESTING PROCESS
562b
410
WatchDog Driver

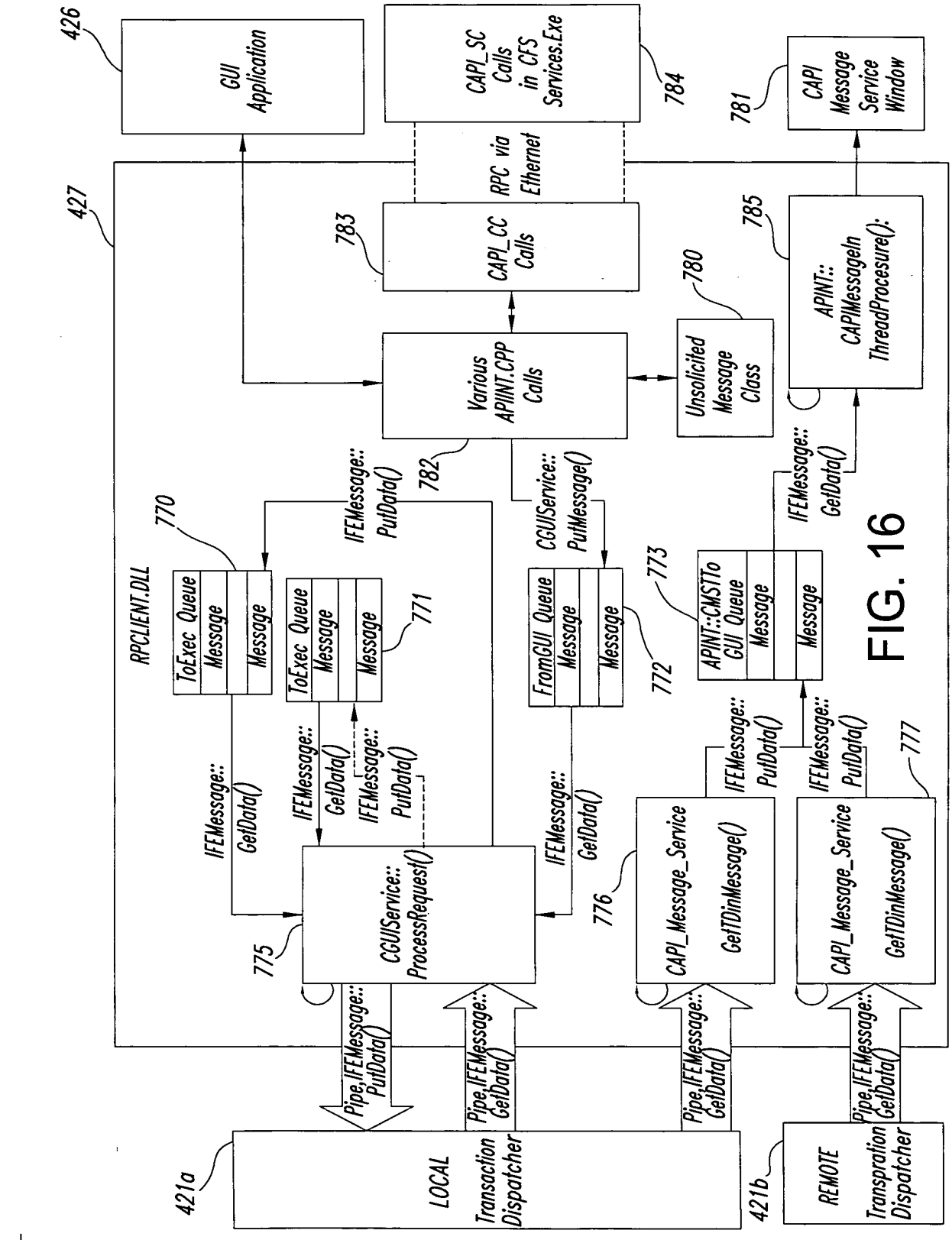

426
GUI Application
CAPI_SC Calls in CFS Services.Exe
784
781
CAPI Message Service Window
427
RPC via Ethernet
783
CAPI_CC Calls
785
APINT:: CAPIMessageIn ThreadProcesure():
780
Unsolicited Message Class
Various APIINT.CPP Calls
782
IFEMessage:: PutData()
CGUIService:: PutMessage()
IFEMessage:: GetData()
770
RPCLIENT.DLL
ToExec Queue
Message
Message
ToExec Queue
Message
Message
771
FromGUI Queue
Message
Message
773
APINT::CMSTTo GUI Queue
Message
Message
772
IFEMessage:: GetData()
IFEMessage:: PutData()
IFEMessage:: GetData()
IFEMessage:: PutData()
IFEMessage:: PutData()
IFEMessage:: PutData()
IFEMessage:: GetData()
775
CGUIService:: ProcessRequest()
776
CAPI_Message_Service
GetTDinMessage()
777
CAPI_Message_Service
GetTDinMessage()
Pipe,IFEMessage:: PutData()
Pipe,IFEMessage:: GetData()
Pipe,IFEMessage:: GetData()
Pipe,IFEMessage:: GetData()
Pipe,IFEMessage:: GetData()
421a
LOCAL
Transaction Dispatcher
421b
REMOTE
Transpration Dispatcher

FIG. 16

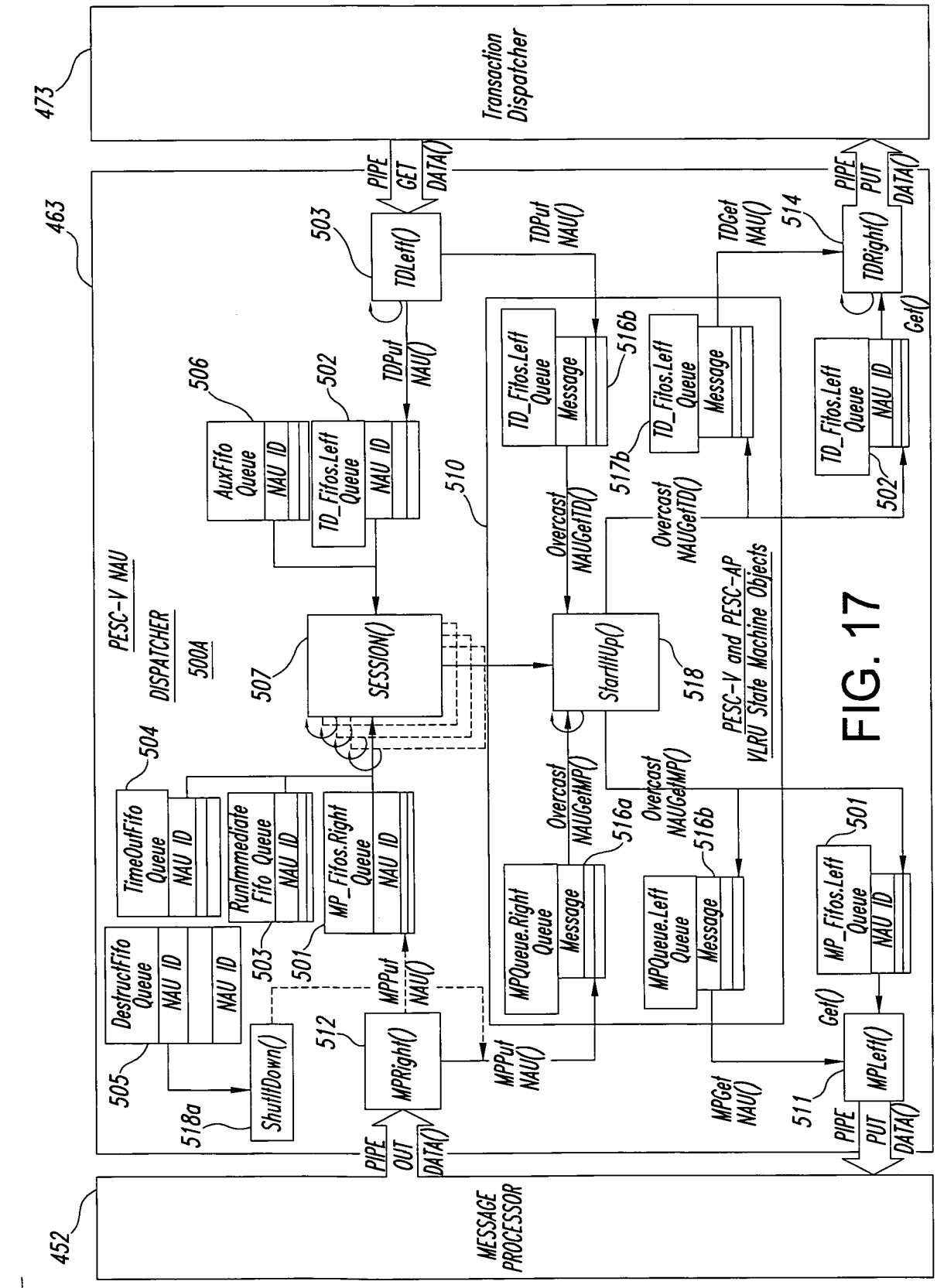
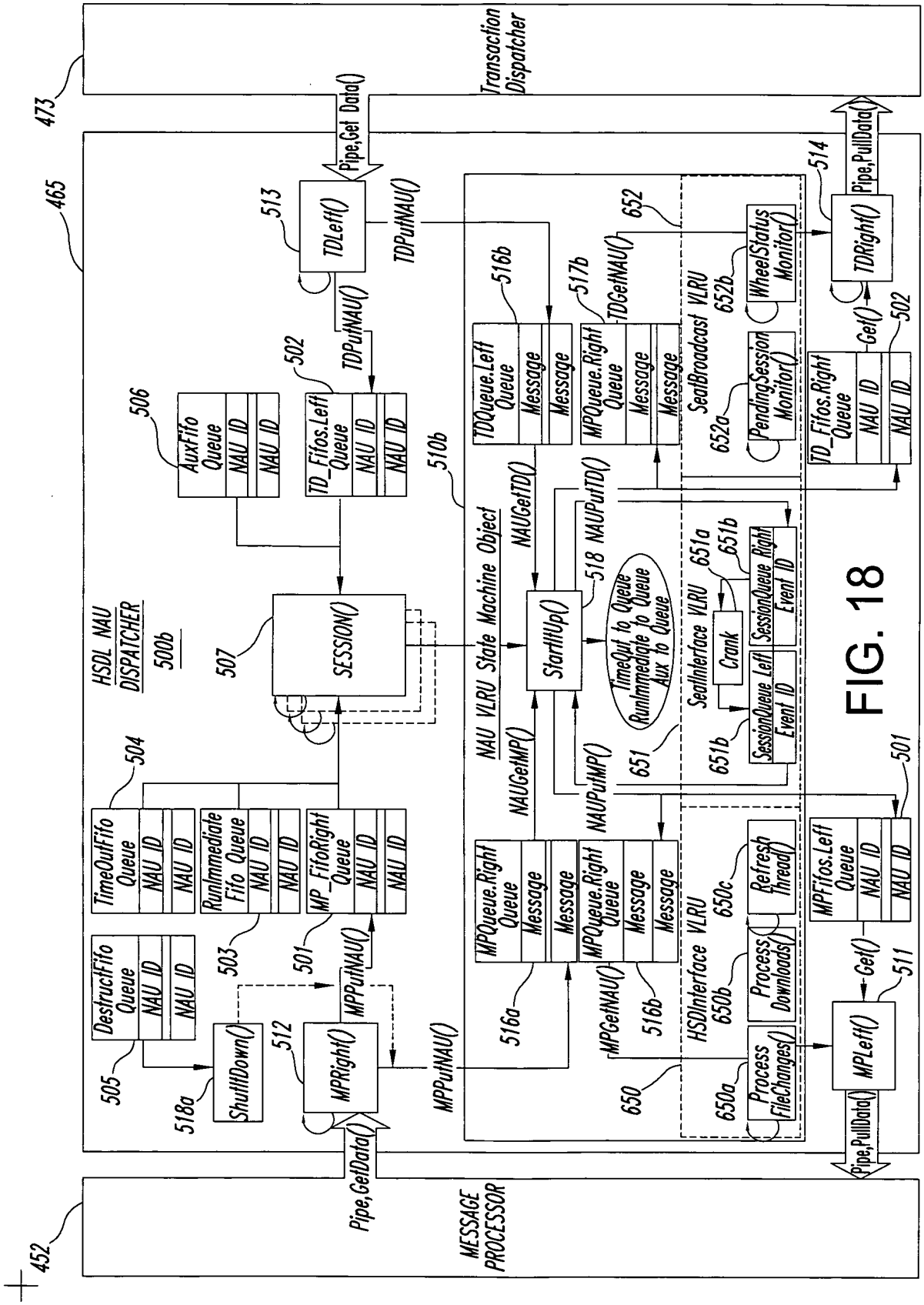

473
Transaction Dispatcher
463
PESC-V NAU DISPATCHER 500A
452
MESSAGE PROCESSOR
PIPE GET DATA()
PIPE PUT DATA()
PIPE OUT DATA()
PIPE PUT DATA()
503
TDLeft()
TDPut NAU()
TDGet NAU()
514
TDRight()
Get()
506
AuxFifo Queue
NAU ID
502
TD_Fifos.Left Queue
NAU ID
510
TD_Fifos.Left Queue
Message
516b
517b
TD_Fifos.Left Queue
Message
TD_Fifos.Left Queue
NAU ID
502
Overcast NAUGetTD()
Overcast NAUGetTD()
507
SESSION()
StartItUp()
518
PESC-V and PESC-AP VLRU State Machine Objects
504
TimeOutFifo Queue
NAU ID
RunImmediate Fifo Queue
NAU ID
MP_Fifos.Right Queue
NAU ID
503
501
Overcast NAUGetMP()
516a
Overcast NAUGetMP()
516b
501
MP_Fifos.Left Queue
NAU ID
DestructFifo Queue
NAU ID
NAU ID
505
MPPut NAU()
512
MPRight()
MPQueue.Right Queue
Message
MPQueue.Left Queue
Message
Get()
518a
ShutItDown()
MPPut NAU()
MPGet NAU()
511
MPLeft()

FIG. 17


Transaction Dispatcher
473
465
Pipe,Get Data()
TDLeft()
513
TDPutNAU()
TDPutNAU()
502
TD_Fifos.Left Queue
NAU ID
NAU ID
AuxFifo Queue
506
HSDL NAU DISPATCHER
500b
SESSION()
507
TimeOutFifo Queue
504
RunImmediate Fifo Queue
MP_FifoRight Queue
DestructFifo Queue
505
503
501
MPPutNAU()
ShutItDown()
518a
512
MPRight()
MPPutNAU()
Pipe,GetData()
452
MESSAGE PROCESSOR
NAU VLRU State Machine Object
StartItUp()
518
NAUGetTD()
NAUPutTD()
NAUGetMP()
NAUPutMP()
TimeOut to Queue
RunImmediate to Queue
Aux to Queue
510b
TDQueue.Left Queue
Message
516b
MPQueue.Right Queue
517b
TDGetNAU()
652
SeatBroadcast VLRU
WheelStatus Monitor()
652b
PendingSession Monitor()
652a
TD_Fifos.Right Queue
Get()
502
TDRight()
514
Pipe,PullData()
SeatInterface VLRU
651a
651b
Crank
SessionQueue Left
SessionQueue Right
Event ID
651
MPQueue.Right Queue
MPQueue.Right Queue
516a
MPGetNAU()
516b
HSDInterface VLRU
650
650b
650c
Process Downloads()
Refresh Thread()
650a
Process FileChanges()
MPFifos.Left Queue
501
Get()
511
MPLeft()
Pipe,PullData()
FIG. 18

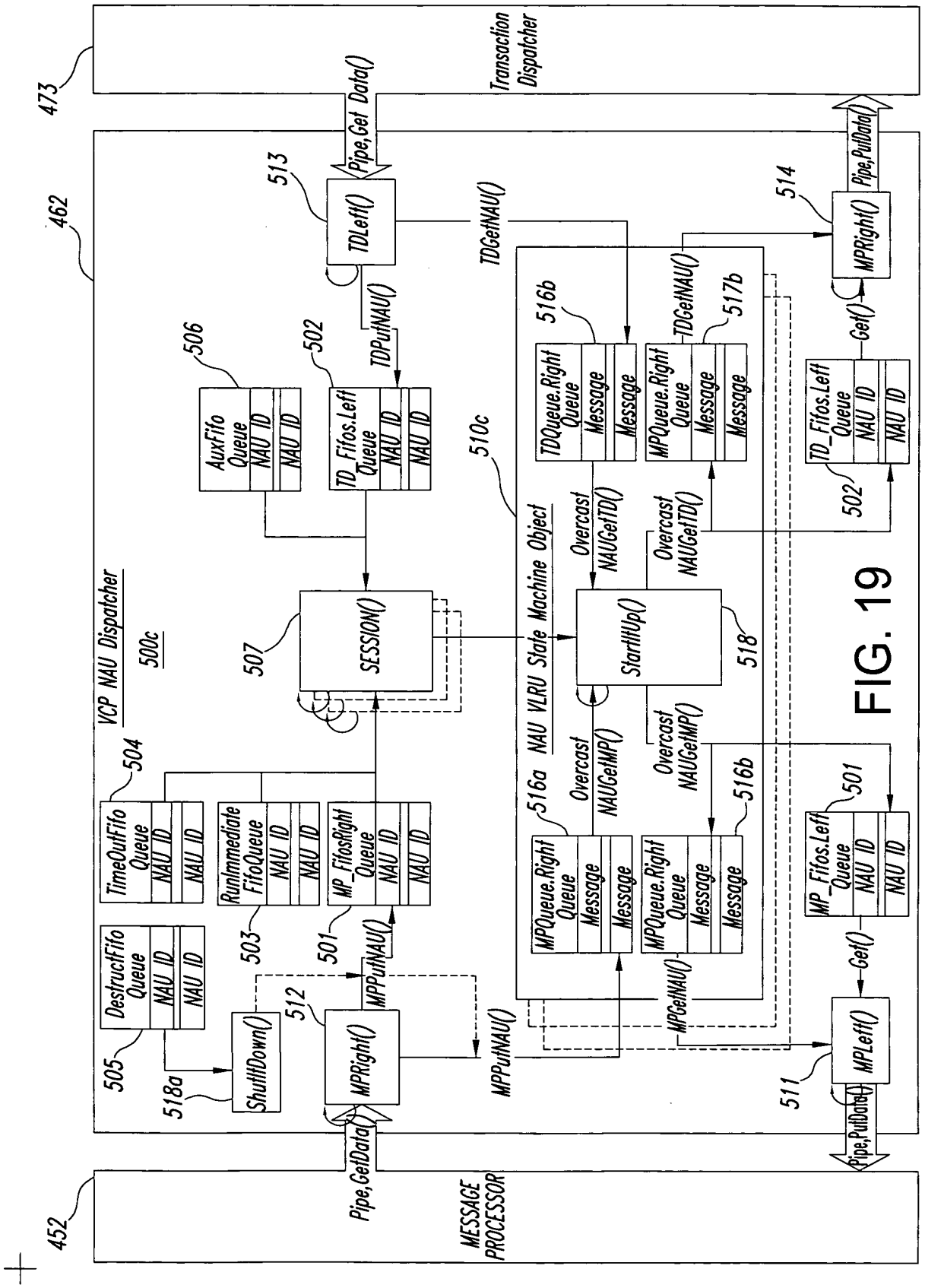
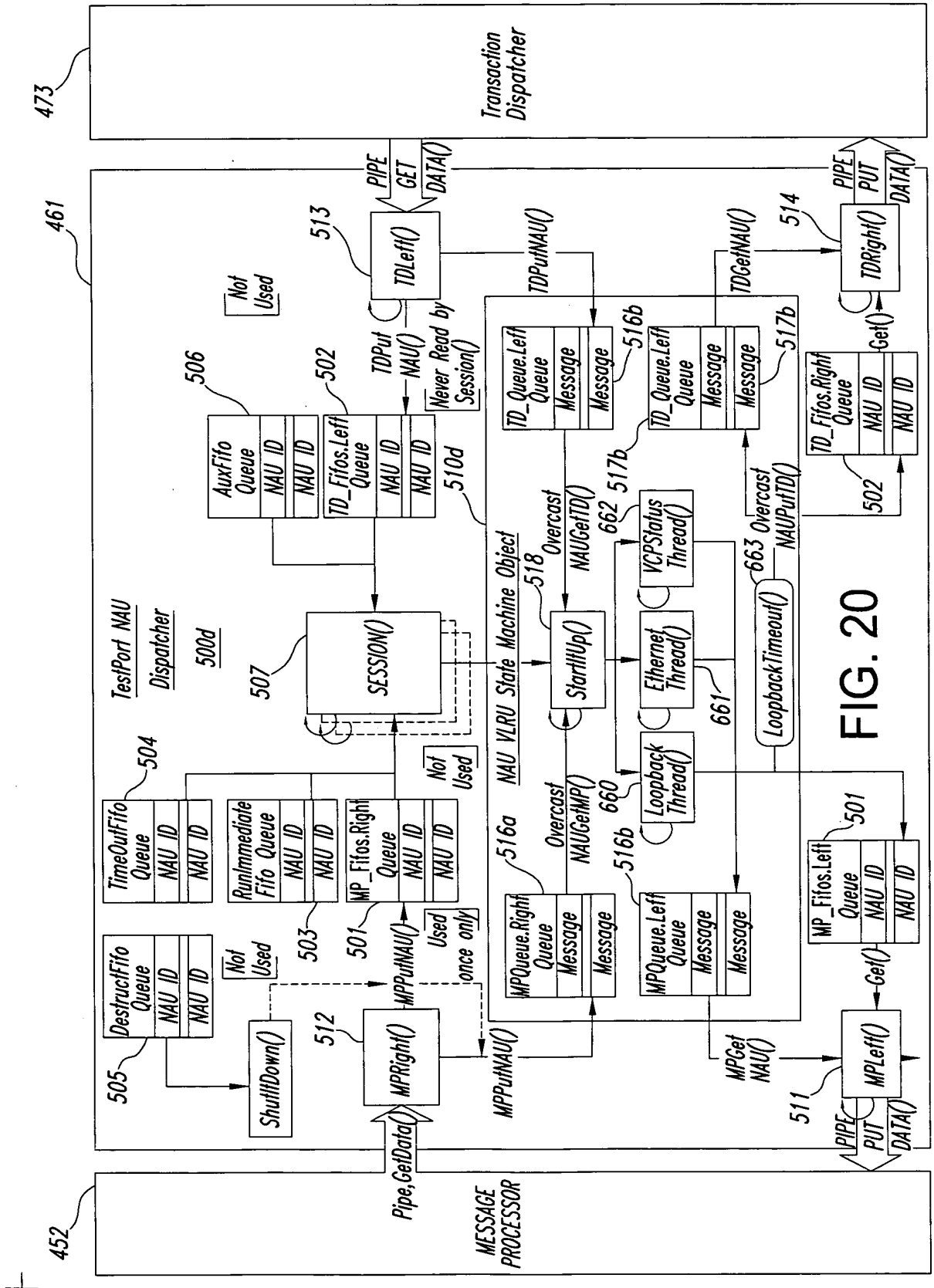

473
Transaction Dispatcher
Pipe,Get Data()
462
513
TDLeft()
TDGetNAU()
514
MPRight()
Pipe,PutData()
TDPutNAU()
506
502
AuxFifo Queue
NAU ID
NAU ID
TD_Fifos.Left Queue
NAU ID
NAU ID
510c
516b
TDQueue.Right Queue
Message
Message
TDGetNAU()
517b
MPQueue.Right Queue
Message
Message
Get()
TD_Fifos.Left Queue
NAU ID
NAU ID
VCP NAU Dispatcher
500c
507
SESSION()
Overcast NAUGetTD()
StartItUp()
518
Overcast NAUGetTD()
502
504
TimeOutFifo Queue
NAU ID
NAU ID
RunImmediate FifoQueue
NAU ID
NAU ID
MP_FifosRight Queue
NAU ID
NAU ID
NAU VLRU State Machine Object
516a
Overcast NAUGetMP()
Overcast NAUGetMP()
516b
501
MP_Fifos.Left Queue
NAU ID
NAU ID
MPQueue.Right Queue
Message
Message
MPQueue.Right Queue
Message
Message
DestructFifo Queue
NAU ID
NAU ID
505
503
501
MPPutNAU()
Get()
518a
ShutItDown()
512
MPRight()
MPPutNAU()
MPGetNAU()
511
MPLeft()
Pipe,PutData()
Pipe,GetData()
452
MESSAGE PROCESSOR

FIG. 19


473
Transaction Dispatcher
461
TestPort NAU Dispatcher
500d
452
MESSAGE PROCESSOR
Pipe,GetData()
PIPE
GET
DATA()
PIPE
PUT
DATA()
TDLeft()
TDRight()
513
514
TDPutNAU()
TDGetNAU()
TDPut NAU()
Never Read by Session()
Not Used
AuxFifo Queue
NAU_ID
TD_Fifos.Left Queue
TD_Fifos.Right Queue
TD_Queue.Left Queue
Message
506
502
510d
516b
517b
662
SESSION()
507
NAU VLRU State Machine Object
518
StartItUp()
Overcast NAUGetTID()
VCPStatus Thread()
Ethernet Thread()
Loopback Thread()
661
660
663
Overcast NAUPutTID()
LoopbackTimeout()
TimeOutFifo Queue
RunImmediate Fifo Queue
MP_Fifos.Right Queue
504
503
501
Not Used
Used once only
MPPutNAU()
MPQueue.Right Queue
MPQueue.Left Queue
516a
Overcast NAUGetMP()
DestructFifo Queue
505
ShutItDown()
512
MPRight()
MPPutNAU()
MPGet NAU()
MPLeft()
511
MP_Fifos.Left Queue
501
Get()
PIPE
PUT
DATA()
FIG. 20

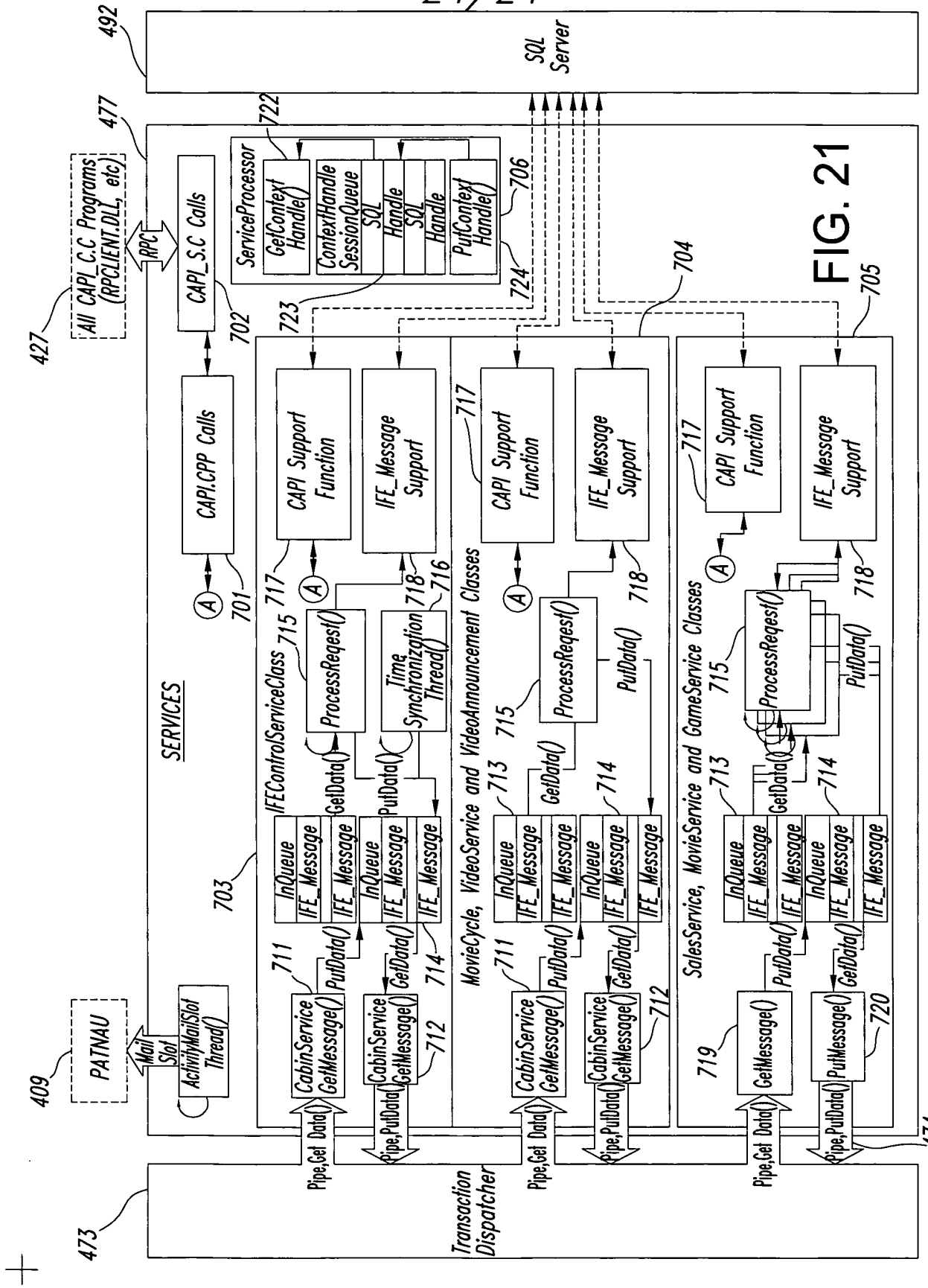

492
SQL Server
477
All CAPI_C.C Programs (RPCLIENT.DLL, etc)
427
RPC
CAPI_S.C Calls
702
ServiceProcessor
722
GetContext Handle()
ContextHandle SessionQueue
SQL Handle
SQL Handle
PutContext Handle()
706
724
723
704
705
CAPI.CPP Calls
701
SERVICES
IFEControlServiceClass
715
ProcessRegest()
GetData()
PutData()
Time Synchronization Thread()
CAPI Support Function
717
IFE_Message Support
716
718
703
InQueue
IFE_Message
711
714
CabinService
GetMessage()
Pipe,GetData()
Pipe,PutData()
712
MovieCycle, VideoService and VideoAnnouncement Classes
713
SalesService, MovieService and GameService Classes
719
720
409
PATNAU
Mail Slot
ActivityMailSlot Thread()
473
Transaction Dispatcher
474
A

FIG. 21